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The Progress of Chemistry in Kansas During the Last Fifty Years.

E. H. S. BAILEY.

Looking at the immense advance made in the field of chemistry, it is interesting to notice some of the contributions to this science in Kansas, and especially what has been done in the fifty years of the life of the Academy.

Kansas was and is preëminently an agricultural state, and for years little was done in applied chemistry. To the colleges, such as the University of Kansas, the State Agricultural College, Emporia Normal, Washburn, Baker, Southwestern, Ottawa, McPherson and others, and to the larger high schools, was left most of the work of instructing in chemistry. All these institutions at a very early period in their history offered elementary courses in chemistry, which were soon extended to include qualitative and quantitative analysis. In the more recent years organic chemistry and physical chemistry, as well as many special courses, have been added to the curriculum in these schools.

The instruction given in the various schools led to sending out a large number of scientific men and women, who have made their mark in chemistry and allied subjects. Many well-equipped men have been sent to the various departments of the national government and to state experiment stations.

In addition to the work of instructing in chemistry, these institutions have found time to carry on research work. As an illustration, note the extent to which the Transactions of the Academy of Science has been used as a means of publication of papers on chemistry. The first chemistry paper was by W. H. Saunders, the first professor of chemistry in the University, on the "Comparison of Kansas Coals with Other Western Coals." Up to the year 1900 chemical papers were published as follows: By E. H. S. Bailey, twenty-five; L. E. Sayre, sixteen; J. T. Willard, eleven; G. H. Failyer, eleven; George E. Patrick, eight. That is, a total of about eighty papers of an essentially chemical nature were contributed during this period by the above men and others associated with them. That these papers had a very practical bearing on the economic development of the state is apparent from a glance at some of the titles, such as "Kansas Chalk," "The Iola Gas Well," "The Waconda Meteorite," "Ozone in Kansas Atmosphere," "Ammonia and Nitric Acid in Rain Waters Collected at Agricultural College," "Some Kansas Mineral Waters," "Chemical Composition of Kansas Coals," "The Newly Discovered Salt Beds in Ellsworth County," "Chemical Composition of Cement Plaster," "Effect of Continuous Cropping of Wheat on the Composition of the Soil," "The Sugars of Watermelons," "Variations in the Nitrogen Content of Maize and Possibilities for its Improvement."

There is no necessity for going into details regarding advancement in chemistry during the last few years, since most of those present are familiar in a general way with the progress that has been made. However, it would not do to let the opportunity pass without calling atten-

tion to the great usefulness of chemists in connection with the present World War. In this work, it is needless to say, the Kansas chemists have done their share.

No résumé of the chemical work would be complete without reference to the Trego county coal shales, which were exploited many years ago; and while some of our citizens invested in land, to their sorrow, the assays made at the University laboratory showed that the shales were worthless. In connection with the Iola mineral water, it is interesting to remember that this well was bored in 1873 to a depth of seven hundred and twenty feet, and water and gas were forced up. At this depth the drilling was stopped, yet within a few hundred rods of this well, many years after, the prospectors drilled a well to the depth of eight hundred to nine hundred feet and obtained an abundance of natural gas, which helped to make Iola an important manufacturing center. The drillers stopped just short of a great discovery. The water coming from the well was analyzed by Professor Kedzie of Manhattan and by Professor Patrick of the University, and was used locally and shipped for a score of years.

By being on the ground immediately after the discovery of the Kiowa county meteorite, Dr. F. H. Snow secured a number of very valuable specimens. These were analyzed in the chemical laboratory at the University, and many of them were afterwards sold to eastern dealers. Some of the best specimens of the Washington county meteorite were also obtained by Doctor Snow and analyzed here.

The Federal Government experimented with the use of sorghum for making sugar in the early eighties, under the direction of Dr. H. W. Wiley, of the Department of Agriculture. Mills were erected for making sugar from sorghum at Medicine Lodge, Topeka, Ottawa, and Fort Scott. The factory for making syrup at Fort Scott is the only one that remains.

Many of the contributions to chemistry noted have been along lines for the development of the industrial resources of the state. A great impetus to this branch of chemistry was afforded by the establishment of the Department of Chemical Industrial Research, under the late Dr. R. K. Duncan, and many of our successful chemists, graduating in the chemical course, afterward took up lines of investigation, both here and at Pittsburgh, Pa., under that foundation.

Another school for the education of chemists after they had been started in the colleges was the chemical laboratory of the Santa Fe railroad at Topeka, and many of our men are still in the employ of that corporation. The zinc and lead mining industries in the southeastern part of the state have absorbed quite a number of men who have since become superintendents of the plants where they entered as chemists. More recently the gas and oil interests are affording opportunities for chemists, as well as geologists, to add their practical contributions to the sum of scientific knowledge.

The smelters, oil refineries, soap factories, and packing houses of Kansas City, St. Joseph and Omaha have taken many of our chemists, and have begun the training of young men who have afterward come to us for a complete course in chemistry.

We all recognize the importance of the science of chemistry to the geologist, the botanist, the physicist or mineralogist, as well as to the physician and the student in home economics. It is only by the study of chemistry alongside of these other sciences that the students have gone into the world with a fully rounded knowledge of their special subjects.

What has chemistry wrought in the last fifty years? It has assisted in transforming a treeless plain into a garden of luxurious abundance. It has been the handmaid of the farmer, of the miner, of the dairyman, of the horticulturist and the manufacturer in developing the latent resources of the state of Kansas.

The Early History of Medicine.

J. M. McWHARF.

In the brief time allotted a paper of this character, I can but touch some of the high points. Medicine is one of the most noble of all arts, but through ignorance on the part of many who enter this field it is to-day far behind all other arts. Physicians are many in title, but few in reality. A student of medicine must bring love to the task of labor and perseverance, so that instructions received may take root and bring forth proper and abundant fruits. He must have a true knowledge of medicine, that he may become an esteemed physician in name and reality.

The evolution of medicine from its primitive stage to the present moment presents many fascinating and ludicrous sides.

It would be a pleasure to enter in detail upon the subject matter, but time prevents such consideration. Medicine has been divided into three periods or ages. First, the mythological; second, the dogmatical or empirical; third, the rational. The mythological age began with the human race, coming on down through the centuries to 400 years B C. This was followed by the dogmatical or empirical age, which continued to the close of the eighteenth century A. D., with the death of the Brunonian system.

Here the rational system of medicine enters the field, and Hippocrates has the credit of being the father of this system. To-day we look upon the teaching of Hippocrates as rational empiricism. Long before the birth of philosophy there appeared an order of priest-physicians, cultured by the Asclepiadea, who traced their origin to a mythical personage known as Esculapius. They created temples of health in which they placed their patients, who on entering the temple must undergo purification, bathing or friction, followed by fomentation with odoriferous herbs. Then came a period of total abstinence of food, followed by permission to eat the flesh of animals that were brought to the temple for sacrifice. Religious ceremonies with music were used. In fact, anything and everything to play upon imagination. The asclepia or hospital was as a rule located near a spring, the water of which possessed medicinal properties. Primeval man was powerless with this medical armament to battle against the ravages of an epidemic like the black death of the fourteenth century, which claimed in China alone thirteen million. The human race for centuries have struggled against influences that were an-